

# CONTENTS OF *ECOLOGICAL MODELLING*, VOL. 46

VOL. 46 NOS. 1/2

JULY 1989

## Special Issue

### Artificial Intelligence and Expert Systems in Ecology and Natural Resource Management

Edited by

E.J. Rykiel

#### Editorial

- The use of Prolog for improving the rigour and accessibility of ecological modelling  
R. Muetzelfeldt, D. Robertson, A. Bundy and M. Uschold (Edinburgh, Great Britain) ..... 9
- A demographic simulator with deeply coupled semantic and numeric data structures  
W. Conley and U. Sengupta (Las Cruces, NM, U.S.A.) ..... 35
- AI modelling of animal movements in a heterogeneous habitat  
L.J. Folse, J.M. Packard and W.E. Grant (College Station, TX, U.S.A.) ..... 57
- Transferring scientific knowledge to natural resource managers using artificial intelligence concepts  
J.R. Davis, P.M. Nanninga, J.R.L. Hoare (Canberra, A.C.T., Australia) and A.J. Press (Jabiru, N.T., Australia) ..... 73
- An expert system for a rangeland simulation model  
J.R. Ritchie (Beltsville, MD, U.S.A.) ..... 91
- A rule-based ecological model for the management of an estuarine lake  
A.M. Starfield (Johannesburg, South Africa), B.P. Farm (Minneapolis, MN, U.S.A.) and R.H. Taylor (St Lucia Estuary, South Africa) ..... 107
- An advisory expert system for designing fire prescriptions  
E. Reinhardt, A.H. Wright and D.H. Jackson (Missoula, MT, U.S.A.) ..... 121

VOL. 46 NOS. 3/4

AUGUST 1989

- Verification of the mathematical model of nitrogen circulation with and without light access  
T. Kmeř and d. Tóth (Bratislava, Czechoslovakia) ..... 135
- Multiple nutrient limitations in ecological models  
R.V. O'Neill, D.L. DeAngelis, J.J. Pastor, B.J. Jackson and W.M. Post (Oak Ridge, TN, U.S.A.) ..... 147
- A water budget model for the tropical Magela flood plain  
I.M. Vardavas (Bondi Junction, N.S.W., Australia) ..... 165
- Application of an inverse approach to a Canadian radioactive waste disposal site  
A.G. Bobba and S.R. Joshi (Burlington, Ont., Canada) ..... 195

Probabilistic validation of computer simulations using the bootstrap	
E. Halfon (Burlington, Ont., Canada) . . . . .	213
Analysis of life table response experiments. I. Decomposition of effects on population growth rate	
H. Caswell (Woods Hole, MA, U.S.A.) . . . . .	221
Is <i>Acanthaster planci</i> a near-optimal predator?	
R.M. Seymour (London, Great Britain) . . . . .	239
A method of detecting departure from randomness in plant communities	
Zhang, D. (Lanzhou, People's Republic of China) . . . . .	261
A transition matrix model of European red mite ( <i>Panonychus ulmi</i> ) population dynamics in a managed apple orchard	
M.E.J. Woolhouse (London, Great Britain) and R. Harmsen (Kingston, Ont., Canada) . . . . .	269
Hierarchical foraging models: effects of stocking and landscape composition on simulated resource use by cattle	
R.L. Senft (Booneville, AR, U.S.A.) . . . . .	283
Socio-economic systems as causal factors in the dynamics of ecosystems	
E. Umbach (Osnabrück, Federal Republic of Germany) . . . . .	305
<b>Author Index</b> . . . . .	311

